

# **ROCKPORT HARBOR AT GULL COVE MASSACHUSETTS**

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## **SURVEY (REVIEW OF REPORTS)**



U.S. ARMY ENGINEER DIVISION, NEW ENGLAND  
CORPS OF ENGINEERS      WALTHAM, MASS.

OCTOBER 1965

SURVEY (REVIEW OF REPORTS)  
ROCKPORT HARBOR, GULL COVE, MASS.

SYLLABUS

The Division Engineer finds that the existing anchorage area in Rockport Harbor, Massachusetts, is insufficient to accommodate the present and prospective recreational and commercial fishing fleets. He finds also that expansion of the present protected anchorage area by provision of a 600-foot long breakwater at the entrance to Gull Cove would be the most economical and justifiable plan of improvement. The estimated construction costs of this plan amount to \$460, 000. Annual benefits to be derived from improvement would total \$30, 500 of which 53 percent or \$16, 100 are considered general, and 47 percent or \$14, 400 local. In view of this aspect of the plan he considers that, as an item of local cooperation, local interests should contribute in cash 47 percent of the first cost of construction, said contribution presently estimated at \$216, 000. Rockport Town officials have indicated that the Town is unable and unwilling to participate in any expenditure for the proposed improvement. Therefore, the Division Engineer recommends no modification of the existing Federal navigation project for Rockport Harbor at this time.

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**DEPARTMENT OF THE ARMY**  
**NEW ENGLAND DIVISION, CORPS OF ENGINEERS**  
**424 TRAPELO ROAD**  
**WALTHAM, MASSACHUSETTS 02154**

IN REPLY REFER TO:

NEDED-R

**SUBJECT: Survey (Review of Reports) Rockport Harbor,  
Gull Cove, Massachusetts**

**TO: Chief of Engineers  
ATTN: ENGCW-PD**

**AUTHORITY**

1. This report is submitted in compliance with a resolution, adopted 16 July 1958, which reads as follows:

"RESOLVED BY THE COMMITTEE ON PUBLIC WORKS OF THE HOUSE OF REPRESENTATIVES, UNITED STATES, that the Board of Engineers for Rivers and Harbors be, and is hereby, requested to review the reports on Rockport Harbor, Massachusetts, submitted in House Document 363 Fifty-sixth Congress, First Session, and previous reports, with a view to determining whether modification of the existing project in any way is advisable at this time."

2. By 1st Indorsement dated 28 July 1958 the Chief of Engineers assigned this review report to the Division Engineer, New England.

**PURPOSE AND EXTENT OF STUDY**

3. Engineering and economic studies have been made to determine the need and economic justification of constructing a 600-foot breakwater for the protection of Gull Cove Harbor. A detailed hydrographic survey made in 1962 by the Commonwealth of Massachusetts was used for the purpose of estimating construction costs for the plan of improvement.

4. A public hearing was held at Rockport on 20 June 1962. Information presented at the hearing is described later in this report under "Improvement Desired." The information obtained from the public hearing has been further supplemented by recent field investigations and discussions with local interests. Available maps, past records, and other data pertaining to the harbor have been studied.

#### DESCRIPTION OF NAVIGATION CONDITIONS

5. Rockport Harbor, Massachusetts is situated on the east side of Cape Ann, a rocky headland which forms the southern and western limits of Sandy Bay. It is 35 miles northeast of Boston. There are three coves in the town of Rockport which serve the needs of navigation. The main cove is Rockport Harbor which is the center of boat service activity. The other coves are Pigeon Cove, 1-1/2 miles northwesterly, and Gull Cove about 1/2 mile northwesterly of Rockport Harbor. The proposed breakwater would be located at the mouth of Gull Cove. The existing granite pier is located on the north side of Gull Cove, providing about 3 acres of protected area for boats within the Cove. This pier is a rubble stone structure about 1,000 feet long. It has an average width of 200 feet and rises about 40 feet above M. L. W. It was purchased from private owners by the Town of Rockport in January 1957.

6. The present entrance channel is located on the northeast side of Gull Cove between a small island, known as Sandy Bay Ledge and the mainland, with a controlling depth of 30 feet. The harbor is vulnerable to storm waves from the northeast quadrant. Mean range of tide is 8.6 feet. All depths in this report refer to the plan of mean low water as established by the United States Coast and Geodetic Survey. The location of this cove is shown on U. S. Coast & Geodetic Survey Chart No. 243, on Army Map Service quad sheet for Rockport, and on the map accompanying this report.

7. There are no bridges in the waterway.

#### TRIBUTARY AREA

8. The permanent populations of Essex County, the town of Rockport, and the city of Gloucester in 1960 were 568, 831, 4,616, and 25,789, respectively, an increase since 1950 of 10 percent for

Essex County and Rockport and about 700 people for Gloucester. The above populations are greatly augmented by seasonal residents and tourists during the summer. The town of Rockport and the surrounding region contain a large number of tourist accommodations with about 750 rooms available for rental in Rockport alone. The region is easily accessible over highways and local roads.

### PRIOR REPORTS

9. Rockport Harbor has been subject to several navigation studies, the first of which was made in 1830. The latest report, dated 26 January 1900, (House Document 230, 56th Congress, 1st Session) is the basis of the existing project. Gull Cove has not been subject to Federal study.

### EXISTING CORPS OF ENGINEERS PROJECT

10. The existing Rockport Harbor project was authorized by the River and Harbor Act of 3 March 1899. It provides for the repair of two rubblestone breakwaters at the mouth of the harbor, and for removal of the principal rocks in the harbor. Repairs consisted of reconstructing the breakwater to a top elevation of 18.5 feet. The project was adopted in 1902 and completed in 1905 at a total project cost (1900) of \$22,481. There is no existing project at Gull Cove.

### LOCAL COOPERATION ON EXISTING AND PRIOR PROJECTS

11. There were no requirements of local cooperation on the existing Federal project.

### OTHER IMPROVEMENTS

12. Rockport Harbor has a history of improvements by the town of Rockport and the Commonwealth of Massachusetts. Through the Division of Waterways, Public Works Department, the Commonwealth of Massachusetts has contributed approximately \$119,200 for improvement of Rockport Harbor. These known improvements all involved dredging within the harbor back to the

year 1908. The most recent of these projects was completed in April 1963. It involved the dredging of the inner basin of Rockport Harbor to provide a 7-foot depth. Approximately 10,500 cubic yards of material was removed at a cost of \$57,000.

### TERMINAL AND TRANSFER FACILITIES

13. Within the town of Rockport commercial landing facilities are available in Rockport Harbor, Gull Cove, and Pigeon Cove as follows:

a. Rockport Harbor - There are 3 wharves in Rockport Harbor. The first wharf on the north side of the harbor, known as New Wharf, has a float landing. Fuel, supplies and water are available. The other two wharves form an inner basin on the north side of the harbor used by the commercial fishing and lobster fleet; one wharf is known as Old Wharf and the other T-Wharf. The T-Wharf is town-owned and has a float landing at its head with water depths of 6 feet alongside. The Sandy Bay Yacht Club maintains 3 pontoon float landings, having a total length of 120 feet, on the southeast side of the town wharf. These floats are well equipped for the service and convenience of their members and guests.

b. "Granite Pier", which forms the east side of Gull Cove, was privately constructed from granite quarry rubble and blocks to provide shipping facilities for the now nearly extinct granite industry. In addition, 1,150 feet of granite block wharf space was constructed on the northerly and westerly sides of the harbor, including two stone boat ramps at the head of the Cove. Depths of water in the approaches to the wharf are adequate for small boats presently using the facility. Approximately one-half of the total wharf length of 1,150 feet is privately owned and the other half is owned by the town, including the boat ramps.

c. Pigeon Cove has a bulkhead wharf around the harbor and a public float landing with water depths of 6 feet alongside. The deepest water is located on the northeast side of the cove. A foundry is at the head of the cove. Gasoline can be obtained from a service station near the head of the harbor, and provisions and some supplies can be obtained at a nearby market. A stone ramp dry at low water is at the head of the cove.

### IMPROVEMENT DESIRED

14. In order to afford local interests an opportunity to express their views with respect to the improvement, a public hearing was held at Rockport, Massachusetts on 20 June 1962. The meeting was attended

by about 100 people including two selectmen, representatives of the Chamber of Commerce, officers of the Sandy Bay Yacht Club, members of the Granite Pier Committee for navigation improvements, local businessmen, boat owners and private citizens from Rockport and nearby towns.

15. The town of Rockport had appointed a special committee to study harbor improvements and collect data. The committee presented its recommendations as the desires of local interests. The improvement this committee considered most urgent was the protection of Gull Cove by provision of a breakwater 600' long having a height of 20 feet above mean low water and an access channel 6 feet deep into the Cove. The breakwater would extend from the existing granite pier in a southerly direction to Sandy Bay Ledge. An entrance channel 6 feet deep with minimum width of 125 feet was also requested.

16. Local interests were of the opinion that rock needed for the desired breakwater extension could be obtained from the granite pier, which is presently at a height of about 40 feet above mean low water at an average width of 200 feet. The proposed plan contemplated shaving off the top, down to elevation 20 feet, for a distance of about 900 feet. Local interests felt that this would yield about  $\frac{1}{2}$  of the rock needed to construct the desired breakwater. This material would be used within the proposed breakwater's core and the balance would be supplied from the town of Rockport's quarry.

17. Local interests indicated that Gull Cove is wide open to storm waves from the northeast quadrant, resulting in rough seas which approach the harbor entrance and continue on into the harbor creating conditions unfavorable to safe anchorage. During such storms, it was claimed that boats have been swamped at their moorings and others destroyed on the rocks of the Granite Pier after being torn loose from their moorings.

18. Local interests believe that the desired breakwater would break up the seas which now enter the harbor, thereby improving the safety of the present anchorage area and protecting an additional 7 acres of anchorage area. In addition, the improved harbor would greatly stimulate boating activity by attracting additional transient craft and by encouraging more vessels to base permanently in this complex of harbors at Rockport.

19. It was felt the increased anchorage area at Gull Cove would relieve the present congestion for fishing and recreational craft in Rockport Harbor and nearby Pigeon Cove. The resulting benefits would



include increased use by the existing and transient fleet, a decrease in storm damage to the boats, increased tax resources and increased income from the sale of supplies and expenditures for repair and storage of boats in local yards.

20. State officials were of the opinion that the State would be willing to cooperate with town officials in an improvement recommended by the Corps of Engineers. All town officials, committee members, business representatives, and most individuals that spoke at the public hearing indicated a willingness for the town to contribute a fair share of the cost of a breakwater.

21. The Department of Interior, Fish and Wildlife Service, by letter dated 7 February 1962 requested consideration be given to modifying the proposed breakwater design to allow public fishing from the structure.

#### EXISTING AND PROSPECTIVE COMMERCE

22. Fish and fish products constitute the commerce in the harbor. Two wholesale and retail companies in the harbor process and distribute the major portion of the catch. Records of total fish landings are sporadic as evidenced by the latest 5-year record as follows: (1958) 313 tons, (1959) 125 tons, (1960) 252 tons, (1961) 12 tons, (1962) 555 tons. The apparent irregularity of the records stems from the fishermen, particularly lobstermen, not reporting their catch. Local interests report that this condition has largely been rectified and that the 1962 total is more indicative of the annual average lobster landings. Lobster landings alone in 1962 accounted for 533 tons of the 555 tons reported. This represents about a \$600,000 gross valuation for this commerce alone. The remaining tonnage consists of fish products. In addition, local interests report an annual average of 150 tons of ground fish landings which is valued in excess of \$100,000.

#### VESSEL TRAFFIC

23. There are 106 fishing craft that make Rockport their home port. These fishing boats vary in length up to 45 feet with drafts up to 5 feet. The present value of these vessels is about \$320,000. The traffic created by this fleet of 106 boats is estimated to average 220 round trips per boat for a total of about 23,200 round trips annually. The United States Waterborne Commerce Statistics have reported 29,610 vessel trips for the year 1962 and charter boats are recorded as carrying 7,040 passengers for the year 1962. In addition, there are 450 permanently based recreational craft.

## DIFFICULTIES ATTENDING NAVIGATION

24. The principal difficulties experienced by mariners at Rockport are concerned with hazardous anchorage conditions. Storms from the northeast quadrant result in heavy seas which harass the entire Sandy Bay coast line. As a result, boats anchor close to the head of their respective harbors in the lee of the breakwaters or seek refuge elsewhere due to the limited available safe anchorage. Local interests claim this wave action renders the Gull Cove area entirely unfit for anchorage near the entrance and exposes those vessels at anchor in the inner basin to the danger of tearing loose from their mooring and suffering severe damage by collision or grounding.

25. Local interests further claimed that although badly needed, it is impossible to maintain a public float at the Granite Pier in Gull Cove due to the heavy storm waves passing through the existing entrance channel, particularly at high tidal periods.

## WATER POWER AND OTHER SPECIAL SUBJECTS

26. No problems of water power, flood control, pollution or related subjects are pertinent to this study. The desired improvement would have no adverse effect on wildlife or shellfish. The report of the U. S. Fish and Wildlife Service is contained in Appendix "C".

## PLAN OF IMPROVEMENT

27. Three plans of improvement have been considered in this report. All are in the Gull Cove area. The first, advocated by local interests, consists of building a breakwater 600 feet long, with a top elevation of 20 feet, and a top width of 20 feet, extending in a southerly direction from the existing granite pier to Sandy Bay Ledge. Local interests feel that a breakwater in this position would best serve the needs of the harbor. The breakwater would substantially reduce storm waves from the northeasterly quadrant, and would result in additional safe anchorage area. The additional anchorage would provide for increased use of recreational craft, benefits to the fishing fleet and reductions in annual boat damages.

28. The second plan considered a breakwater substantially the same as the first with the exception that the top width would be reduced from 20 feet to 10 feet. This change in design would result in a lesser amount of stone with a comparable savings in cost, while still providing full protection to the harbor. A third plan considered modification of

the second plan by constructing a 10-foot wide berm at elevation +12 on the harbor side of the breakwater to accommodate sport fishermen as requested by wildlife interests. The estimated cost of including this feature would be \$50,000. Since local interests did not favor this plan, no further consideration was given to it.

29. An opening to the south 100 feet wide and 6 feet deep is currently available and considered adequate to accommodate the expected vessel traffic. Although dredging will not be needed initially, an entrance channel 6 feet deep and 100 feet wide is included as part of the project to allow for future maintenance. Except in the berth areas, it is not expected that maintenance will ever be needed inside the harbor. All plans of improvement would effectively protect an additional 7 acres of anchorage against storm waves in Gull Cove. Town officials indicated by letter of 16 January 1964 that they unanimously favored accepting the second of the three considered plans.

30. Wave studies showed that all of the considered breakwaters would be effective for overall protection of the harbor from north-easterly storms. Wave studies pertinent to the effectiveness of the breakwater show that waves greater than about 2 feet in height will be eliminated from 90% of the harbor's area.

31. Design calculations and assumptions pertinent to the typical cross section for the breakwater are shown Appendix B. Based on design wave height of 15 feet, a typical section of the breakwater results in the following dimensions:

a. Seaward side slope of 1 on 2 with a 2.0' berm at elevation -15, leeward side slopes 1 on 1.5 with a 2.0 foot berm at elevation -5.0 feet.

b. Top width 10 feet at elevation +20 feet.

c. 10-ton armor stone, two layers thick on seaward side.

5-ton armor stone, two layers thick on leeward side.

32. A typical cross-section of the breakwater, showing the proposed dimensions is shown on Plate 1. The dimensions of the breakwater and size of stone indicated were developed from available data on type, size, direction and frequency of wave attack anticipated on the structure.

33. Field investigations were made to determine the suitability of the town's quarry, privately-owned quarries and the existing granite

pier, as possible sources of material for construction of the proposed breakwater extension. The town-owned Rockport quarry was found to have a sufficient supply of suitable material, with the exception of the 10-ton face stone which can be supplied from a nearby privately-owned site via existing haul roads. The suitability of using part of the upper portion of the granite pier as a source of ready material, as suggested by local interests will be determined during construction. If suitable and economically practical it will be utilized. No information is presently available as to the make-up of the existing rock within this pier.

#### SHORELINE CHANGES

34. There is only minor movement of sand along the shore at this location. Most of this material is trapped in the many pocket beaches along the adjacent shoreline. The deep canyon off the face of the recommended breakwater prevents significant movement in that area. The proposed improvement would have no significant effect on the adjacent shorelines.

#### REQUIRED AIDS TO NAVIGATION

35. The United States Coast Guard has been consulted with regard to establishing aids to navigation for the improvement under consideration. They have reported by letter dated 19 February 1964, that it will be necessary to mark the new entrance channel with two unlighted buoys estimated to cost \$1,200 with an annual maintenance cost of \$70.

#### ESTIMATE OF FIRST COSTS

36. Estimates of first costs have been prepared for two plans of improvement. These plans provide for the protection of Gull Cove by a breakwater 600 feet long and include a 6-foot entrance channel.

37. Estimates of first cost for these two plans are based on price levels of September 1965 and include allowances for contingencies, engineering, design, supervision and administration. Detailed costs are shown in Appendix A. A summary of the estimated first cost for each item of the improvement is as follows:

A PLAN OF IMPROVEMENT (PLAN I)

Stone breakwater (20' top width)	\$ 450,000*
Engineering and Design	20,000
Supervision and Administration	<u>45,000</u>
Total Project Construction Costs)	\$ 515,000
Aids to Navigation (Coast Guard)	1,200
Total Project Cost (April 1964)	\$ 516,200

B

PLAN OF IMPROVEMENT (PLAN II)

Stone breakwater (10' top width)	\$ 400,000*
Engineering and Design	20,000
Supervision and Administration	<u>40,000</u>
Total Project Construction Costs	\$ 460,000
Aids to Navigation (Coast Guard)	1,200
Total Project Cost (April 1964)	\$ 461,200

\*Include Contingencies

ESTIMATES OF ANNUAL CHARGES

38. The estimated annual charges for all plans of improvement are based on an anticipated project life of 50 years, at an interest rate of 3-1/8 percent for both Federal and non-Federal investments. Non-Federal investment costs are based on an apportionment of cost among local interests in proportion to the benefits resulting from the improvement. Annual maintenance charges for the breakwater are based on replacing about 160 tons of stone annually. A unit price of \$10.00 per ton is expected because of the small amount of stone needing replacement and the degree of difficulty to perform maintenance work. Shoaling in the entrance channel is expected to be minor. The rate of shoaling is estimated to amount to less than one foot over a ten-year period. On this basis, dredging might be needed once in 20 years and would result in an annual maintenance charge of about \$400.00. Maintenance of the breakwater and channel would be the sole responsibility of the United States. The computation of annual charges for the plan considered best, (PLAN II), are detailed on the following page.

600-Foot Breakwater - Plan II (Recommended)

Federal Annual Charges

Corps of Engineers

Interest and Amortization	\$ 9,709
0.03979 (244,000)	

Annual Maintenance

Breakwater	1,600
Channel	400

United States Coast Guard

Interest and Amortization	48
0.03979 (1,200)	

Additional Annual Maintenance	70
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Non-Federal Charges	<u>8,595</u>
0.03979 (216,000)	

Total Annual Charges	\$ 20,422
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Say	\$ 20,400
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ESTIMATES OF BENEFITS

39. Rockport Harbor includes three component areas which make up the overall harbor. These areas, Pigeon Cove, Gull Cove, and Rockport Harbor now have insufficient safe anchorage for the existing fishing and recreational fleets. Consequently, use of the harbor is restricted and the congested anchorages are the source of boat damage, particularly during storms. The improvement, by providing 7 additional acres of protected anchorage, will generate both general and local benefits. General benefits will accrue from reduction in storm damage to fishing vessels and the increased use of the harbor by the existing fishing fleet. Recreational benefits, considered to be equally general in nature, will result from reduction of storm damage to recreational craft, increased use of the harbor by the present local and transient fleets and additions to the fleet as a result of the improvement.

40. Gull Cove is exposed to the northeast. Wave studies of the area show that waves generated from the northeast quadrant now have a direct access to the cove. Maximum waves are estimated to be 15 feet high, generated from this quadrant, and occur at least once a year. These waves at the present time pass through the existing cove entrance creating

conditions unfavorable to safe anchorage. Wave studies indicate that without improvement Gull Cove Harbor has little or no protection from the severe northeast storms that attack the Sandy Bay area.

41. Specific amounts of fishing boat damage were not tendered by local interests. From information gained in conversations with local fishermen and statements made at the hearing, it is evident that annual boat damage is incurred, particularly at Gull Cove. The fishing fleet normally is based at Rockport Harbor. However, during the recreational season some of these boats move to Gull Cove in order to make room for the recreational fleet. A large part of the annual damages to the fishing fleet is incurred in this area during sudden summer squalls. Additional damage to fishing boats in the other areas result from congested anchorage conditions, which preclude maneuvering of boats thus causing frequent collisions. Such collisions are minor but usually require repairs. On this basis, it is conservatively estimated that an annual boat damage averaging \$16 per boat or \$1700 for the entire fleet of 106 boats could be prevented by the utilization of the 7 acres of safe anchorage provided by the proposed breakwater. This benefit represents about 0.5 percent of the estimated \$320,000 value of the existing fishing fleet. It is considered that no other commercial benefits would be derived from improvement.

42. Benefits for the recreational fleet have been evaluated as the gain in annual return which the owner of the craft would enjoy, if improvements were made. The annual net return to the owners of recreational boats has been taken as the net amount the owners would receive if they chartered their boats to others. The value of this gain is expressed as a percentage of the current market value of the fleet. The gain represents the difference between present use of the harbor and the increased use that will be made possible as a result of improvement. Ideal return varies according to the size and type of boat. For this report, the ideal return would range from 13 percent for outboards, 8 percent for the larger boats, and 14 percent for full time charter boats.

43. Benefits to be derived from the existing 150 small outboards and 150 small sail boats have been reduced by 50 percent. Local interests have indicated that this fleet uses the anchorage facilities only for limited periods of time. These 300 boats make up 68% of the entire recreational fleet and if considered to use the presently available 19 acres of anchorage continuously would cause a density of about 30 boats per acre, thus magnifying the already over-crowded anchorage conditions. The reduced ideal percent of return for these boats is reflected in Table I.

44. Increased use of the harbor would be a primary benefit accruing from the breakwater protection. Increased use is considered to result

from easing congestion in the present anchorages by allowing for the transfer of parts of the existing fleet to the new anchorage. The consensus of opinion of those who advocated this improvement is that the present boating season varies depending on the type of craft in question. Inboards, outboards, and cruisers enjoy about a 120-day season. The auxiliary sail boat season is about 180 days, and sail boats depending on size enjoy a 125 day to 200 day season. These seasons range from mid-April to the end of October. The shortened season for the smaller craft is due in part to a large number of absentee owners who do not leave their boats unattended during the early part of May and beyond mid-September, because of the high incidence of equinoctial storms with winds up to 50 and 60 miles per hour during this period. These storms usually originate in the northeast quadrant.

45. The existing locally based recreational fleet consists of 442 boats. Of these, 150 are outboards, 40 inboards, 34 cruisers, 36 auxiliary sail, 166 sail boats and 16 charter boats. Benefits from the increased use by the existing and prospective fleet have been computed. This improvement will allow full unrestricted use of the harbor for those fleets, and annual benefits have been evaluated on this basis, and are shown on Table I.

46. It is reported by local people that there are about 1200 boats visiting the harbor annually with an average stay in the harbor of about 1 day per boat. For an average 150 day transient boating season, this will amount to 1200 boat days or the equivalent of 8 permanently based boats. The benefits will amount to \$800 of which \$400 is considered general and \$400 local. Benefits for these boats are detailed in Table II.

47. Local interests cited the congested anchorage conditions as a primary cause for the deterioration of the existing recreational fleet. It was claimed that several boat owners had left the fleet because of congested conditions. In addition, it was claimed that several summer residents were waiting for additional space in the harbor, prior to engaging in recreational boating. Also, the yacht club has indicated that it has a waiting list of potential boatowners. In view of these conditions, recreational boating is expected to increase substantially immediately after improvement. On this basis, it is conservatively estimated that the existing recreational fleet will increase by at least 5 percent or 22 boats. The composition of this fleet and the benefits to be obtained by them are shown in Table No. III. No benefits are taken for future additions to the fleet, as it is considered that the harbor's potential for further increases will be small without further expansion, which is not foreseeable at this time.

48. The annual benefits described above are summarized in the following Table No. IV.



ROCKPORT HARBOR  
AT  
HARBOR: GULL COVE

TABLE I BENEFITS TO RECREATIONAL BOATING  
EXISTING FLEET

Type of Craft	Length (feet)	No. of Boats	Depreciated Value		Ideal	Percent Return		Gain	Value \$	On Cruise		
			Average \$	Total \$		% of Ideal Pres.	Ftr.			Avg. Days	% of Season	Value \$
Recreational Fleet												
Outboards	10-20	150	1,000	150,000	13	85	95	1.3	1950*	see footnote		
Inboards	10-20	40	1,500	60,000	11	85	95	1.1	660	-	-	-
Cruisers	15-30	24	15,000	360,000	9	85	95	0.9	3240	8	7	230
	31-50	10	20,000	200,000	8	85	95	0.8	1600	15	12	190
	51-60											
Aux. Sail	15-30	30	9,300	280,000	9	85	95	0.9	2520	8	4	100
	31-40	4	25,000	100,000	8	85	95	0.8	800	15	8	60
	41-60	2	25,000	50,000	8	85	95	0.8	400	15	8	30
Sailboats	10-20	150	835	125,000	12	85	95	1.2	1500*	see footnote		
	21-30	10	2,500	25,000	11	85	95	1.1	280	10	5	15
	31-40	6	3,000	18,000	10	85	95	1.0	180	10	5	10
Charter Boats												
Cruisers	36-50	16	6,250	100,000	15	85	95	1.4	1400	-	-	-
		442	\$1,468,000						\$14,530			\$635

Total Benefits 14,530 -  $\frac{(\$1,950 \text{ } \nearrow \text{ } \$1,500)}{2}$  - \$635 + \$12,170 say \$12,100

\*Boats of this type would only use the anchorage facilities 50% of the boating season.

ROCKPORT HARBOR  
 AT  
 HARBOR: GULL COVE      TABLE II BENEFITS TO RECREATIONAL BOATING  
 TRANSIENT FLEET

Type of Craft	Length (feet)	No. of Boats	Depreciated Value		Ideal	Percent Return		Gain	Value \$
			Average \$	Total \$		%of Ideal Pres. Ftr.			
Cruisers	31-50	3	20,000	60,000	9	85	95	0.9	540
Aux. Sail	31-40	1	25,000	25,000	8	85	95	0.8	200
Sailboats	10-20	3	850	2,550	12	90	95	0.6	15
	21-30	1	2,500	2,500	11	85	95	1.1	27
<u>Charter Boats</u>									
Cruisers	21-35								
TOTALS		8		\$90,050					\$ 782

Say Net Benefit \$800/Yr.

ROCKPORT HARBOR  
AT  
HARBOR: GULL COVE

TABLE III BENEFITS TO RECREATIONAL BOATING  
NEW FLEET

Type of Craft	Length (feet)	No. of Boats	Depreciated Value		Percent Return			Gain	Value \$	On Cruise		Val.
			Average \$	Total \$	Ideal	% of Ideal Pres.	Ftr			Avg Days	% of Season	
<u>Recreational Fleet</u>												
Cruisers	15-30	2	7,000	14,000	9	0	95	8.55	1197	8	7	84
	31-50	2	10,000	20,000	8	0	95	7.6	1520	15	12	182
Aux. Sail	15-30	4	5,000	20,000	9	0	95	8.55	1710	8	4	68
	31-40	4	12,000	48,000	8	0	95	7.6	3648	15	8	292
Sailboats	10-20	4	800	3,200	12	0	95	11.4	365	-	-	-
	21-30	1	2,000	2,000	11	0	95	10.45	209	10	5	10
<u>Charter Boats</u>												
Cruisers	36-50	5	6,500	32,500	14	0	95	13.3	4323			
TOTALS		22		\$139,700					\$12,972			\$636

Net Benefit = \$12,972 - \$636 = \$12,336 - Say \$12,300

TABLE IV

600' Breakwater Extension

<u>Source</u>	<u>General</u>	<u>Local</u>	<u>Total</u>
<u>Fishing Boats: (106)</u>			
Reduction in Storm Damage	\$ 1,700	-	\$ 1,700
<u>Recreational Boats:</u>			
Existing Fleet (422)	\$ 6,050	\$6,050	\$ 12,100
<u>Recreational Boats:</u>			
Transient Fleet (8)	\$ 400	\$ 400	\$ 800
New Boats (22)	\$ 6,150	\$6,150	\$ 12,300
Reduction in Storm Damage	\$ 1,800	\$1,800	\$ 3,600
Totals	\$ 16,100 53%	\$ 14,400 47%	\$ 30,500 100%

COMPARISON OF BENEFITS AND COSTS

49. Comparison of the estimated annual benefits with the estimated annual carrying charges for the recommended plan of improvement results in the following benefit-cost ratio.

600-foot Breakwater (Recommended)

Estimated annual benefits	\$30,500
Estimated annual charges	\$20,400
Benefit-Cost Ratio	1.5

PROPOSED LOCAL COOPERATION

50. Modification of the existing project for Rockport Harbor by construction of a breakwater would entail definite items of local cooperation. The project would be chiefly recreational. The benefits to be derived have been computed as 53 percent general and 47 percent local. In this case, local interests should contribute in cash 47 percent of the first cost of construction. At 1965 price levels, the cost of construction would be \$460,000, which would require a local contribution of \$216,000.

51. In addition to the cash contribution, local interests should provide, without cost to the United States, all lands, easements, and rights-of-way necessary for construction and maintenance of the project when and as required. Local interests should also hold and save the United States free from damages that may result from either the construction works or subsequent maintenance.

52. For projects of this type, it is usual to require that a public landing be provided open to all on equal terms. In the harbor, there is an existing Town-owned granite wharf suitable for public landing. Local interests should provide assurances that the existing public landings will be adequately maintained during the life of the project and will be open to all on equal terms.

#### APPORTIONMENT OF COSTS AMONG INTERESTS

53. Construction costs for the 600-foot recommended breakwater have been apportioned among interests in proportion to the benefits received. Since the second of two plans would meet needs of navigation adequately, the apportionment of cost is made for that plan. The use of the project is primarily in the interests of recreational navigation and the benefits are evaluated as being 53% general and 47% local. Accordingly, the apportionment of costs is as follows:

##### 600-Foot Recommended Breakwater

##### Federal

Corps of Engineers: 53% of \$460, 000                      \$ 244, 000

##### Non-Federal

Cash Contribution: 47% of \$460, 000                      \$ 216, 000

#### COORDINATION WITH OTHER AGENCIES

54. All Federal, State and local interests having an interest in this improvement of Gull Cove Harbor were notified of the public hearing held on June 20, 1962. Officials of the Commonwealth of Massachusetts, the Town of Rockport, recreational and fishing interests were consulted concerning the effects of the proposed improvement on their activities. Local interests were consulted on the study findings at a meeting held on 6 December 1963. These interests expressed approval of the proposed improvement, and their willingness to cooperate in the proposed project.

In view of the rather limited cost of the proposed project, State and local interests indicated by letters of 23 December 1963 and 16 January 1964, respectively, a preference for accomplishing the project under authority of Section 107 of the 1960 River and Harbor Act to expedite allotment of funds, even though the local share of cost would be increased thereby by \$44,000. Subsequent to project approval under that authority, the annual town meetings of 1964 and 1965 voted negatively on the project. By letter of 21 May 1965, the Board of Selectmen notified that they would not reconsider the project (under either authority) and requested that funds allocated be withdrawn. Correspondence with local interests is included in Appendix D.

55. The United States Coast Guard was advised on the improvement under consideration and has reported on the need and costs for aids to navigation .

56. The Regional Office of the United States Fish and Wildlife Service was also requested to comment on the plan of improvement. Their report notes that lobster fishing in the general area would not be affected significantly and that no significant commercial fishery benefits to the lobster fleet would result from the improvement. The report recommends that provisions for sport fishing be incorporated into the breakwater to include safe walking surface on top of the structure or construction of a berm with adequate attendant access, parking and sanitary facilities. The report further states that the facilities requested will accrue to the public at large and be widespread and general and consequently should be a non-reimbursable Federal cost.

57. Consideration was given to inclusion of a berm for sport fishing in a plan of improvement. This plan together with a plan without the berm was submitted to both State and local officials for comments on the adequacy of the plans for their needs. In allocating the cost of the added features for sport fishing, the cost of the on-project and off-project facilities were apportioned as 50% Federal and 50% local. The purpose of the breakwater is to provide safe anchorage for navigation. Since the benefits from the project would accrue primarily to recreational boating, the cost of the structure was apportioned in accordance with present policy for small boat harbors which assign recreational boating as 50% general and 50% local. It is considered that benefits to be derived by sport fishing from the structure are equally local and general in character. Further, it is considered unreasonable to treat recreational benefits from sport fishing as entirely general when the major function of the structure is for navigation purposes and the recreational benefits anticipated to accrue to navigation from the structure are equally general and local in character.

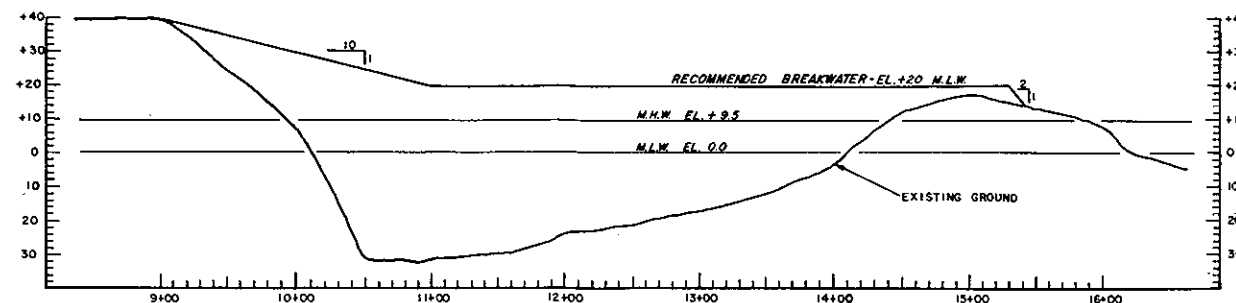
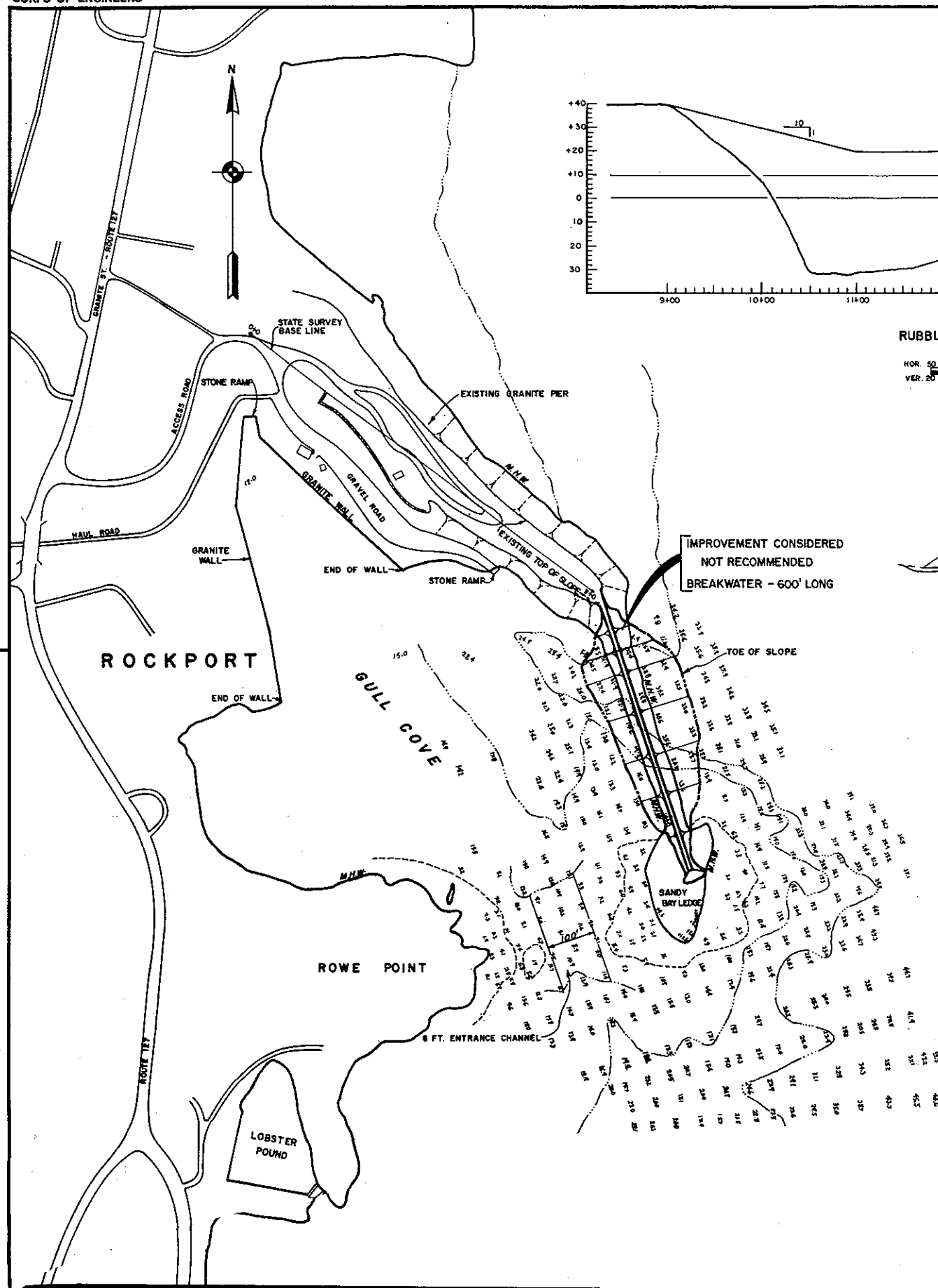
58. In view of the probability that the estimated Federal cost of a breakwater to protect Gull Cove would exceed the Federal limitation of \$200,000 as defined in Section 107 of the 1960 River and Harbor Act, the cost of the addition of features for sport fishing would ultimately become a local responsibility. The Town of Rockport officials, in initially approving project formulation under the Section 107 program, stated a preference for a breakwater for navigation purposes only. On this basis, provision of features for sport fishing are not included in the plan of improvement at this time since means are lacking for financing this construction. It is considered, also, that the structure as proposed will permit limited benefits to sports fisheries and the resultant conditions will be conducive to later installation of safety features by local interests when the demand materializes. The report of the U. S. Fish and Wildlife Service is included in Appendix "C".

### CONCLUSION AND RECOMMENDATION

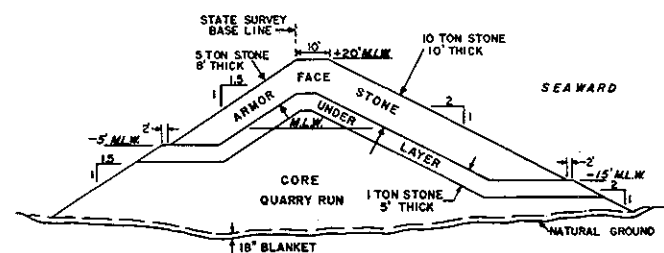
59. Because of the present congestion in the protected anchorage at Rockport Harbor, Massachusetts, it is concluded that Federal participation in a project to provide additional protected anchorage at Gull Cove is warranted. This protection could be best accomplished by extending the existing granite pier in Gull Cove for a distance of 600 feet to Sandy Bay Ledge. A 6-foot deep channel would be maintained between the end of the breakwater and the mainland. This improvement would result in benefits to both recreational boating and fishing vessels that would yield a ratio of annual benefits to annual costs of 1.5.

60. In view of the rejection by two consecutive town meetings of an item for participation in the project cost and meeting other requirements of local cooperation, the Division Engineer recommends no further modification at this time of the project for Rockport Harbor to provide for additional protected anchorage.

E. J. RIBBS  
Colonel, Corps of Engineers  
Acting Division Engineer



PROFILE  
RUBBLE-MOUND BREAKWATER  
SCALE IN FEET  
HOR. 50  
VER. 20



TYPICAL SECTION-600 FOOT BREAKWATER  
SCALE IN FEET  
20 0 40

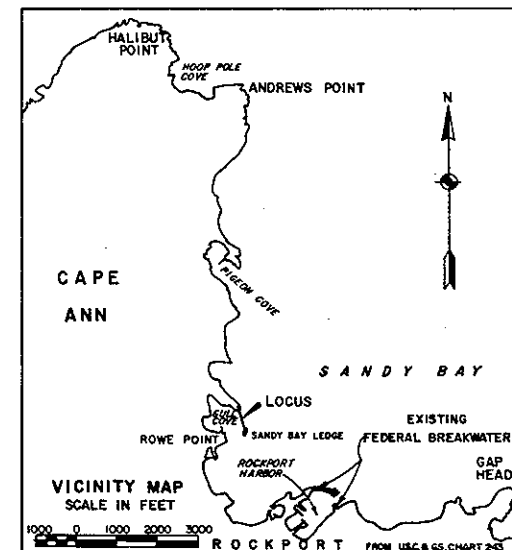
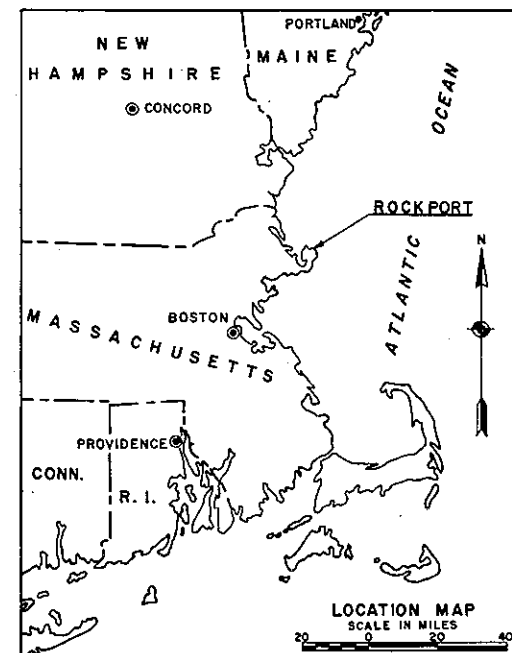
IMPROVEMENT CONSIDERED  
NOT RECOMMENDED  
BREAKWATER - 600' LONG

#### GENERAL NOTES:

Soundings are in feet and tenths and are referred to the plane of Mean Low Water. Mean range of tide is 8.6 feet. Soundings are based on hydrographic survey data of February 1961 by Division of Waterways, Commonwealth of Massachusetts.

#### LEGEND

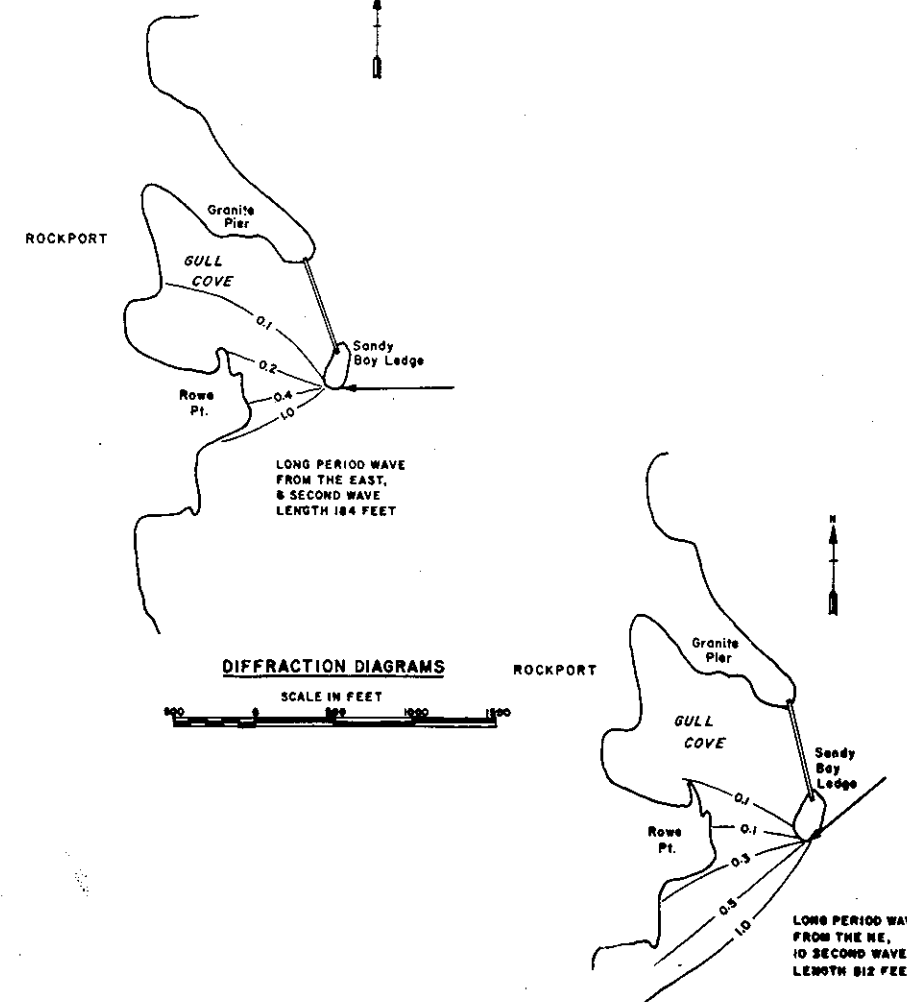
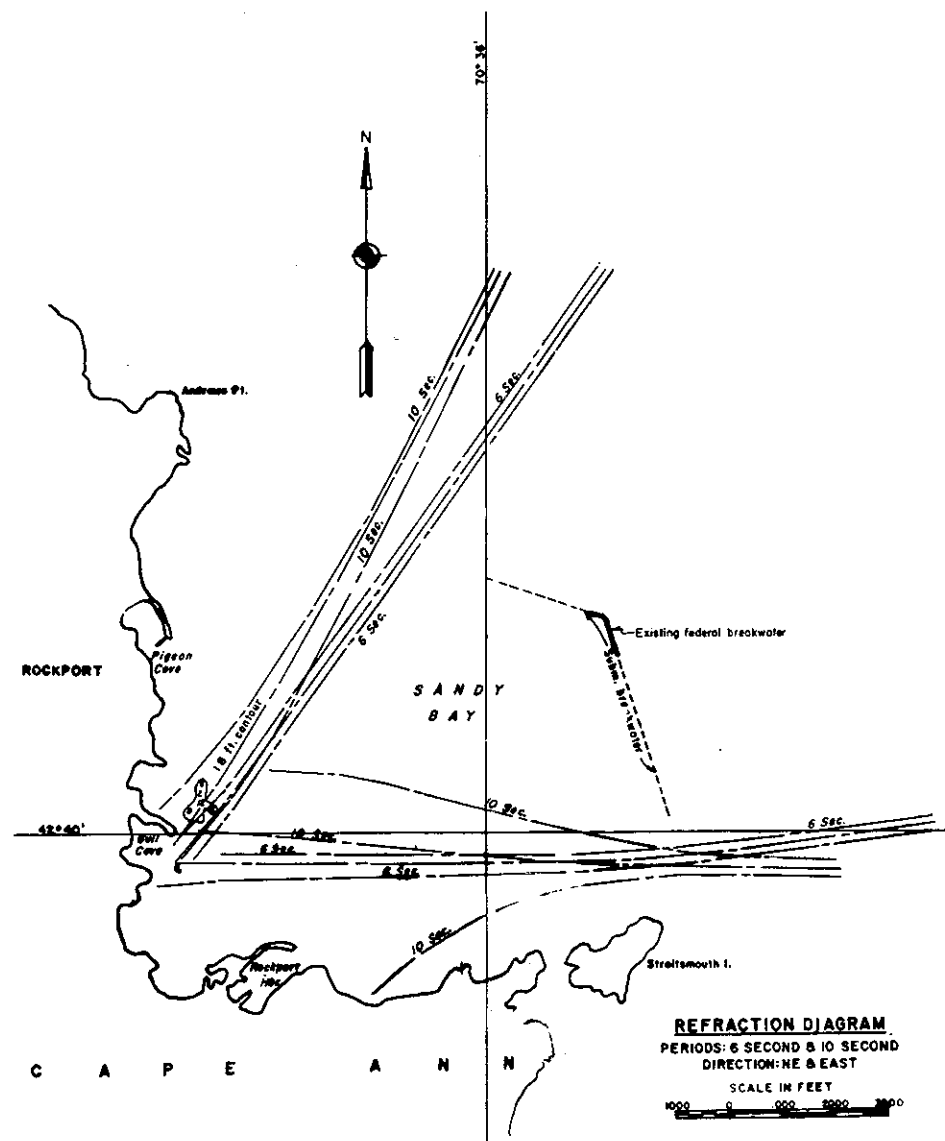
Depth contours shown as follows:  
24 ft. —————  
18 ft. —————  
12 ft. —————  
6 ft. —————



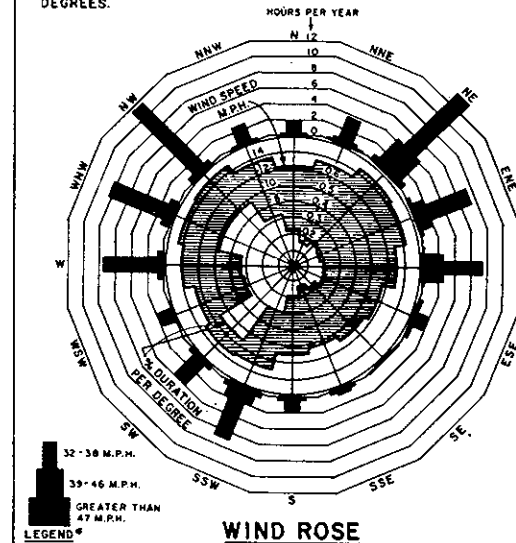
U.S. ARMY ENGINEER DIVISION, NEW ENGLAND CORPS OF ENGINEERS, WALTHAM, MASS.	
<b>ROCKPORT HARBOR AT GULL COVE, MASS.</b>	
SHEET 1 OF 1	OCT. 1965
SCALE IN FEET 0 100 200	
APPROVED: <i>[Signature]</i> CHIEF, ENGINEERING DIVISION	TO ACCOMPANY SURVEY REPORT DATED: OCT. 13, 1965
SUBMITTED: <i>[Signature]</i> CHIEF, PLANNING AND REPORTS BRANCH	FILE NO. 14 F-9-3
CHIEF, CIVIL AND MARINE DIVISION	
CHIEF, SURVEY BRANCH	

Revised Jan. 1965

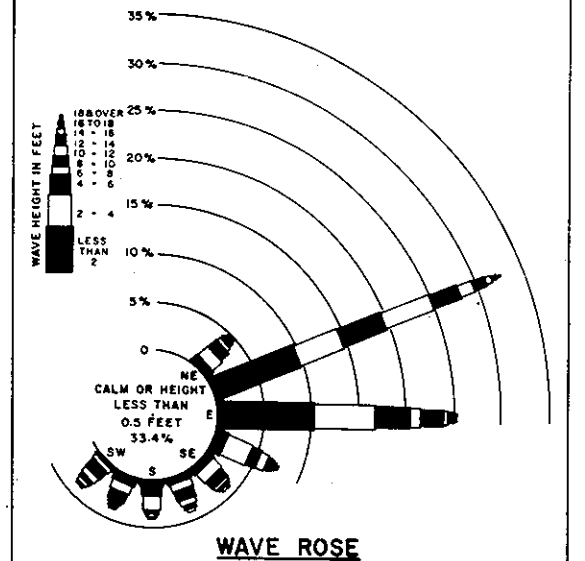




\*DURATION FOR EACH RANGE OF WIND SPEEDS IS MEASURED OUTWARD FROM TOP OF UNDERLYING BAR GRAPH.  
**NOTE:**  
PERCENT DURATION PER DEGREE IS THE AVERAGE PERCENT DURATION OBSERVED FOR EACH 16 POINTS OF THE COMPASS DIVIDED BY 22 1/2 DEGREES.



COMPOSED OF DATA OBTAINED BY HINDCAST OF 3 YEARS OF WIND RECORDS (1948-1950) SHOWING PERCENT OF TIME WAVES OF DIFFERENT HEIGHT OCCUR FROM EACH DIRECTION FROM BEACH EROSION BOARD TECH. MEMO. NO. 55.



U.S. ARMY ENGINEER DIVISION, NEW ENGLAND CORPS OF ENGINEERS, WALTHAM, MASS.	
<b>ROCKPORT HARBOR AT GULL COVE</b>	
SHEET 1 OF 1	WAVE DIAGRAMS
APPROVED: <i>[Signature]</i>	TO ACCOMPANY SURVEY
SUBMITTED: <i>[Signature]</i>	REPORT DATED: OCT. 13, 1965
DESIGNED AND PLANNED BY: <i>[Signature]</i>	FILE NO. 14F-9-3
CHECKED BY: <i>[Signature]</i>	
DESIGNED AND PLANNED BY: <i>[Signature]</i>	
CHECKED BY: <i>[Signature]</i>	

## GULL COVE HARBOR

### APPENDIX A

#### ESTIMATE OF FIRST COST

1. First costs of construction for two plans of improvement are detailed below. In addition, a 10-foot wide berm on the landward side of each structure was estimated. Additional cost of the berm was estimated at \$50,000 in each case. Since the berm was not included in the recommended plan of improvement, its costs are not discussed further. Estimated quantities are based on an allowance of 1.5 feet for settlement and reflect prices prevailing in September 1965.

2. The detailed estimates of cost are as follows:

Project Cost Estimate  
Alternate Improvement  
(Not Recommended)

<u>Cost Account Number</u>		<u>Cost Estimate (x \$1,000)</u>
09	Stone:	
	10-ton face stone-23,000 tons @\$6.00	138.0
	5-ton face stone-7,000 tons @\$4.00	28.0
	Core-quarry run stone, 75,000 tons @\$3.00 (includes 18" settlement)	<u>225.0</u>
	Sub-total	\$ 391.0
	Contingencies @15%	<u>59.0</u>
	Total Construction Costs	\$ 450.0
30	Engineering and Design	20.0
	Supervision and Administration	<u>45.0</u>
	Corps of Engineers Total	\$ <u>515.0</u>
	Aids to Navigation (Coast Guard)	<u>1.2</u>
	Total Project Cost(September 1965)	\$ 516.2

600-Foot Breakwater  
(Recommended)

<u>Cost Account Number</u>	<u>Item</u>	<u>Cost Estimate (x \$1,000)</u>
09	Stone:	
	10-ton face stone-21,000 tons @\$6.00	\$ 126.0
	5-ton face stone-7,000 tons @\$4.00	28.0
	Core-quarry run stone-65,000 tons @\$3.00 (includes 18" settlement) blanket)	<u>195.0</u>
	Sub-Total	\$ 349.0
	Contingencies @15%	<u>51.0</u>
	Total Construction Costs	\$ 400.0
30	Engineering and Design	20.0
	Supervision and Administration	<u>40.0</u>
	Corps of Engineers Total	\$ 460.0
	Aids to Navigation (Coast Guard)	<u>1.2</u>
	Total Project Cost (September 1965)	\$ 461.2

## APPENDIX B

### DESIGN OF IMPROVEMENT

1. Gull Cove is exposed to storm waves generated from the northeast quadrant. The axis of the harbor is approximately N-S. Storms approaching from the northeast quadrant result in heavy seas which surge into the harbor. This wave action creates conditions unfit for anchorage and causes vessel damage at the head of the harbor. It was found that a breakwater along the east side of the harbor, as desired by local interests, to reduce storm waves would best serve the navigation needs of the Town of Rockport.

2. Refraction studies relative to determining design wave heights at the mouth of the cove were made for wind-generated waves approaching from the northeast quadrant with an unlimited fetch. The refraction diagrams are shown on Plate 2 attached to this report.

3. A design wave of 15 feet was determined for storms originating from the NE quadrant. Due to the irregularity of the bottom contours and an existing shoal located about 700 feet NE of the proposed structure, it was found that the orthogonal diverged to such an extent upon approaching the entrance to the harbor that a reliable refraction coefficient could not be obtained for wave periods of 10 or more seconds. However, a coefficient of 0.6 was considered reasonable for obtaining the design wave height.

4. Significant wave heights between 20 and 25 feet were obtained at deep water station off Nauset Beach, Cape Cod, Massachusetts in the years 1948 through 1950. These heights prevailed for a total of 32 hours in that period. Applying the 0.6 refraction coefficient to these significant wave heights resulted in a design wave height of 15.0 feet. Computations for a design wave height approaching the harbor based on United States Weather Bureau records at Boston which shows the duration of winds, their direction and speeds, for the period October 1949 to September 1959 revealed a maximum wave height of 15 feet. Thus, the design wave height described above is confirmed. Diffraction wave studies were made for the proposed breakwater layout to determine the effectiveness of the structure in reducing storm waves entering the harbor. It was considered that if storm waves approaching from the northeast could be reduced to about 2 feet, then no serious problem to the existing and prospective fleet using the harbor during such storms would be encountered. The studies indicated that the proposed 600-foot breakwater is effective in reducing storm waves within the major portion of the harbor to 2 feet or less.

5. Field investigation of the existing granite pier revealed that its armor stone is of about a 5-ton size, on a 1 on 4 slope. This slope prevails from an elevation of 5 feet above to well below mean low water. Above the 5-foot elevation, the slope is about 1 on  $1\frac{1}{2}$  which is probably the slope maintained throughout in original construction. Using the Waterways Experimental Station's stabilization formula (EM1110-2-2904), it appears that the 5-ton armor stone could have been disturbed in such a manner as to result in the flatter slope.

6. For the design of the typical section of the breakwater, Waterways Experimental Station Formula was used. Based on a 15-foot design wave, 163 lbs/cu. ft. stone and a K sub delta of 3.5 and a slope of 1 on 2, it was determined that a 10-ton armor stone is required. The use of the 10-ton stone which is available in the areas is considered to be more economical than to flatten the slope of the face of the breakwater. This consideration is based on the depths of water involved. The 1 on 2 slope would extend down to one design wave height or 15 feet below M. L. W. Thence for ease of construction, a 2-foot berm would be placed at -15 feet M. L. W. Thence, the 1 on 2 slope would continue down to the bottom. The width of the crest should be at least two stones wide. Based on 10-ton stone having a width of 4 to 5 feet the crest width would be 10 feet.

7. The height of the breakwater was predicated on the run-up of a long period deepwater wave with an unlimited fetch, and generated from east-northeast direction. It was determined that a 15-foot wave at the breakwater in the 30-foot depth of water had a wave steepness factor of 0.05. Based on a steepness factor of 0.05, a run-up factor of 0.95 was applied to the 15-foot wave. Therefore, the wave run-up would be in the order of 14 feet and when added to the still water level of 11.0 feet above mean low water results in storm run-up to an elevation of 25 feet at the proposed breakwater location.

8. It is concluded that the top elevation of the breakwater should be 20 feet above M. L. W. for the following reasons:

a. The overtopping of the breakwater by the wave run-up of 4 to 5 feet would not have a significant effect on the wave action within the harbor.

b. The occurrence of the 15-foot deep ocean wave at the breakwater at the time of spring range of tide (+11' M. L. W.) would be infrequent.

APPENDIX C



UNITED STATES  
DEPARTMENT OF THE INTERIOR  
FISH AND WILDLIFE SERVICE  
BUREAU OF SPORT FISHERIES AND WILDLIFE

59 TEMPLE PLACE  
BOSTON, MASSACHUSETTS 02111  
June 2, 1964

Division Engineer  
New England Division  
U. S. Army Corps of Engineers  
424 Trapelo Road  
Waltham, Massachusetts 02154

Dear Sir:

This is our conservation and development report on the fish and wildlife resources that may be affected by navigation improvement measures being considered for Rockport, Massachusetts, under Section 107 of the 1960 River and Harbor Act. This report was prepared under authority of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661-666 inc.), in cooperation with the Massachusetts Division of Fisheries and Game and the Division of Marine Fisheries, and has the concurrence of these agencies as indicated by letters dated May 6, 1964 and May 4, 1964, respectively. This report has been coordinated with and represents the views of the Bureau of Commercial Fisheries.

It is our understanding that a breakwater in Sandy Bay is being considered to improve Gull Cove Harbor. The breakwater, about 600 feet long, would extend from the existing granite pier to Sandy Bay Ledge. Private yachts and other recreational boats anchor in the area. The breakwater will make the anchorage safer for these boats. We understand that State and local officials in reviewing your studies showed interest in potential fisherman use of the breakwater. They feel that fishing from a berm near the mean high water mark may be preferred to fishing from the top of the breakwater.

Lobster fishing in the general area would not be significantly affected. Improvement of Gull Cove Harbor will provide no significant commercial fishery benefits to the lobster fishing fleet.

The breakwater will provide additional sport fishery opportunities if safe and easy access is provided. Recent surveys by the Massachusetts Division of Fisheries and Game revealed that shore fishing opportunities are limited in Rockport. We estimate the average annual fisherman use of the breakwater would be 8,000 fisherman days, whether fishing is provided on the top of the breakwater or on berms near the mean high water level. Although fishermen would fish from both sides of the breakwater, the majority would fish from the side facing shore. The average annual fishery benefits would be \$12,000. This is based on a recreational value of \$1.50 per fisherman day.

The sport fishery benefits are based on provision of a safe walking surface either on the top of the breakwater or on berms and providing access and parking facilities are included. A safe walking surface can be provided by having the stones within a 6-inch vertical variation and chinking the gaps. A safety railing would be desirable.

We estimate that parking facilities for fishermen on or near the granite pier would be needed for 20 vehicles during peak day use. Additional parking space may be needed for other visitors to the area.

Sport fishery benefits associated with the breakwater without the walkway would amount to about \$3,000-\$4,000 annually provided access and parking facilities are included. There would be no sport fishery value associated with the breakwater if there is no access for fishermen.

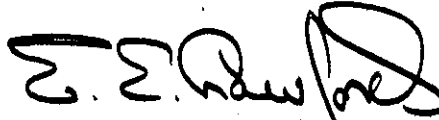
Since the above-mentioned facilities will accrue to the public at large and be widespread and general, the cost of these facilities should be a non-reimbursable Federal cost of the project.

If the breakwater is constructed, we recommend—

1. That fishermen be provided access to the breakwater.
2. That the breakwater provide a safe walking surface on the top or on berms for fishermen.
3. That safety railings be provided.
4. That parking facilities for 20 vehicles be available to fishermen at or near the existing granite pier.

5. That, if the project is recommended for Federal construction, the cost of providing access, safety railings, parking facilities, and a safe walking surface on the breakwater or berms be a non-reimbursable Federal cost of the project.

Sincerely yours,

A handwritten signature in black ink, appearing to read "E. E. Crawford". The signature is stylized with a large, looping "C" at the end.

E. E. Crawford  
Acting Regional Director



APPENDIX D



*The Commonwealth of Massachusetts*

*Department of Public Works*

*Division of Waterways*

*100 Nashua Street, Boston 02114*

December 23, 1963

P. C. Hyzer, Brigadier General, U. S. A.  
Division Engineer  
U. S. Army Engineer Division  
424 Trapelo Road,  
Waltham 54, Massachusetts

Dear General Hyzer:

Reference is made to your letter of December 18, 1963 concerning the proposed extension of a breakwater in Gull Cove in Rockport Harbor.

The Division of Waterways favors the proposed project.

It is my belief that the Town of Rockport's interest would best be served by proceeding under the general authority of Section 107 of the 1960 River and Harbor Act even though the cost of local participation would be greater. In this connection plan number 1 would be advisable.

The Commonwealth would be prepared to assume one-half of the cost in excess of \$200,000.00 under plan 1. However if the town financing is such that procedure under the authority of Chapter 107 of the Acts of 1960 is not possible the Commonwealth will be able to participate to the extent of one-half the cost of the local share on either plan 1 or plan 2.

I trust that this information is sufficient at this time.

Very truly yours,

*Anthony W. Spadafora*

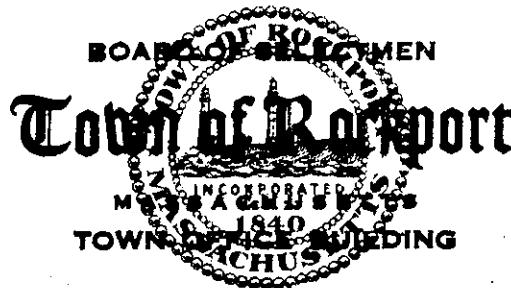
ANTHONY W. SPADAFORA  
Acting Director, Division of Waterways

## APPENDIX D

FREDERICK R. GROVER  
JOHN E. HUTTUNEN

ERNEST R. POOLE, JR., CHAIRMAN

KARL A. JOHNSON  
RICHARD K. MANSON



January 16, 1964

P. C. Hyzer, Brigadier General, U.S.A.  
Division Engineer  
U. S. Army Engineer Division  
424 Trapelo Road  
Waltham 54, Massachusetts

Dear General Hyzer:

In reply to your letter dated December 18, 1963, the Board of Selectmen first wish to thank you and the members of your engineering staff for the complete cooperation we have received regarding the Town of Rockport's petition to extend the breakwater in Gull Cove Harbor.

For your information, the Board of Selectmen unanimously voted to accept Plan #1 under Section 107 of the 1960 River and Harbor Act. In this plan the Federal Government would contribute \$200,000. and the Town's share with help from the Commonwealth of Massachusetts would be \$259,000. making a total of \$459,000.

The 1964 Annual Town Meeting is to be held on March 2, 1964. The Selectmen have inserted the following two articles to cover this project.

Article 20: To see if the Town will vote to raise and appropriate, or transfer from available funds, or borrow by bond issue, or notes, a sum of money for the purpose of constructing a breakwater from Granite Pier to Sandy Bay Ledge, as shown on a plan entitled Gull Cove Harbor, on file at the Office of the Board of Selectmen, and to accept and use in conjunction therewith, allotments made available from the State and Federal Government.

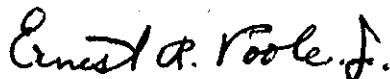
Article 21: To see if the Town will assume liability, in the manner provided by the Federal and State Laws, for

all damages that may be incurred by the work to be performed by the Federal and State Government, for the construction of a breakwater between the Granite Pier and Sandy Bay Ledge in the Gull Cove Harbor area, and authorize the Selectmen to execute and deliver a bond of indemnity therefor to the Federal and State Government.

We would sincerely appreciate a prompt reply if you have any suggestions for the rewording of these two articles.

Very truly yours,

BOARD OF SELECTMEN

A handwritten signature in cursive script that reads "Ernest R. Poole, Jr.".

Ernest R. Poole, Jr.,  
Chairman

ERP,jr./nw  
cc: Anthony Spadafora

APPENDIX D

FRANCIS P. BREWER  
JOHN E. HUTTUNEN

ERNEST R. POOLE, JR., CHAIRMAN

KARL A. JOHNSON  
RICHARD K. MANSON

BOARD OF SELECTMEN

**Town of Rockport**

MASSACHUSETTS  
TOWN OFFICE BUILDING

May 21, 1965

Colonel E. J. Ribbs  
U.S. Army Engineer Division, New England  
424 Trapelo Road  
Waltham, Mass. 02154

Dear Colonel Ribbs:

Ref: NEDED-R

The Board of Selectmen inserted articles in the last two Town Meeting Warrants requesting funds for the Town's share to participate in the construction of a breakwater at Gull Cove, Rockport. At each meeting the citizens voted in the negative, mainly, because of the tax burden it would place on the Town.

This Board, at their regular meeting held Thursday, May 13, 1965, unanimously voted that they would not reconsider this project, therefore, we request you to take the necessary steps to withdraw any Federal funds that have been allocated for this project.

We wish to thank you and the members of your staff for the complete cooperation you have given the Town of Rockport in your efforts to help us secure a much needed breakwater. You may be assured that before this Board goes out on a limb again for such a large project that we will have the approval of a large majority of the citizens before requesting any survey.

Very truly yours,

BOARD OF SELECTMEN

*Ernest R. Poole, Jr.*

ERP,jr./nw

Ernest R. Poole, Jr., Chairman

SURVEY (REVIEW OF REPORTS)  
ROCKPORT HARBOR AT GULL COVE  
ROCKPORT, MASSACHUSETTS

Information called for by Senate Resolution 148, 85th Congress, adopted 28 January 1958.

1. Navigation Problems. Rockport Harbor includes three component areas which make up the overall harbor. These areas are known as Rockport Harbor, Pigeon Cove, and the project site, Gull Cove. These harbors are located in Sandy Bay about 35 miles northeast of Boston, Massachusetts. Gull Cove is the most feasible location for development of small boat traffic in Rockport. The existing anchorage area in Rockport Harbor is insufficient to accommodate the present and prospective recreational and commercial fishing fleets.

2. The principal difficulty attending navigation is unsafe and limited anchorage. The harbor is exposed to storm waves from the northeast quadrant which result in swells that cause unsafe anchorage, considerable boat damage, curtail the recreational boating season, and limit fishing operations.

3. Improvement Considered. In order to provide for sheltered anchorage in Gull Cove, local interests requested breakwater protection. The desired plan is substantially the same as the recommended plan with one exception, the top width has been reduced from 20 feet to 10 feet. It was determined that a 20 foot top width, although economically feasible, was not necessary to provide full protection to the harbor. In addition, a 6-foot entrance channel was included as a project feature. The recommended plan would provide the same protection as the requested improvement at a lower cost.

4. Recommended Improvement. On the east side of Gull Cove, a 600-foot stone breakwater extending southerly from the existing Granite Pier to Sandy Bay Ledge, and an entrance channel 6 feet deep would be maintained between the end of the proposed breakwater and the mainland. The estimated first cost of construction for this plan of improvement amounts to

\$460,000, of which local interests would be required to contribute 47% of the first cost, said contribution presently estimated at \$216,000. This improvement would result in benefits to both recreational boating and commercial fishing vessels that would yield a ratio of annual benefits to annual costs of 1.5.

5. Discussion. The recommended improvement would provide a logical and economically feasible means of meeting current and prospective needs of navigation in Rockport Harbor. The project is considered warranted. Proposed local cooperation is consistent with other similar projects. Action by two consecutive town meetings in 1964 and 1965 resulted in rejection of participation in the proposed Federal project. By letter of 21 May 1965 the Board of Selectmen of Rockport gave notification of the inability and unwillingness of the Town to meet the requirements of local cooperation. Accordingly, it is recommended that no modification of the existing project at Rockport Harbor be made at this time.